

CLAIMS

1. A roller guide assembly (14) for an elevator system (10) comprising:
a roller (16) having a hardness that varies responsive to a magnetic field
5 (20).
2. The assembly of claim 1, wherein the roller (16) includes a membrane
(30) containing a fluid (22) having a viscosity that changes responsive to said magnetic
field (20).
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3. The assembly of claim 2, wherein said fluid (22) comprises a magnet-
rheological fluid.
4. The assembly of claim 2, wherein the membrane (30) defines a generally
15 annular chamber (36) supported about a disk (31).
5. The assembly of claim 1, including a magnetic field generator (18)
adjacent said roller (16), said magnetic field generator (18) selectively controllable to
vary the hardness of said roller (16).
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6. The assembly of claim 5, including a plurality of said rollers (16) and a
corresponding plurality of separately actuatable magnetic field generators (18).
7. The assembly of claim 5, wherein said magnetic field generator (18)
25 comprises an electromagnet (21).
8. The assembly of claim 5, wherein said magnetic field generator (18)
comprises a permanent magnet (19).

9. An elevator system (10) comprising:
at least one guide rail (28);
an elevator car (12) movable along the guide rail (28);
a roller (16) supported for movement with said elevator car (12), said
5 roller (16) rolling along a surface of said guide rail (28) and having a hardness that
varies responsive to a magnetic field (20); and
a magnetic field generator (18) that selectively generates said magnetic
field (20).
10. The system of claim 9, wherein said roller (16) includes a membrane
(30) containing a fluid (22), said fluid (22) having a viscosity that changes responsive to
said magnetic field (20).
11. The system of claim 10, wherein said membrane (30) defines a generally
15 annular chamber (36) supported about a disk (31).
12. The system of claim 10, wherein said membrane (30) is in rolling contact
with said surface of said guide rail (28).
13. The system of claim 9, including a plurality of rollers (16) and a
20 corresponding plurality of magnetic field generators (18).
14. The system of claim 13, including a controller (24) that selectively and
individually controls the magnetic field generators (18).
15. The system of claim 9, including a sensor device (26) that provides
information regarding the orientation of said elevator car (12) and a controller (24) that
receives information from said sensor device (26) and responsively controls said
magnetic field (20) generator to vary said roller hardness.

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16 A method of controlling vibration of an elevator car (12) that has an associated plurality of rollers (16) adapted to guide the elevator car (12) along a guide rail (28) comprising the steps of:

- 5 a) determining a condition of the elevator car (12) relative to a desired condition; and
- b) selectively varying a hardness of at least one of the rollers (16) responsive to said determined condition.

10 17. The method of claim 16, including providing the rollers with a fluid having a viscosity that changes responsive to a magnetic field and wherein step (b) includes selectively varying a magnetic field associated with a specific roller (16).

15 18. The method of claim 17, including varying the strength of the magnetic field (20) independently for each of the rollers (16).

19. The method of claim 16, wherein step (a) includes determining a level of vibration of the car as the car moves along the guide rail.